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NURSERY TREES. PEDIGREE--SELECTION

By George T. Powell, President
The Agricultural Experts' Association

WITH the very active interest that is widely growing in the development of orchards, and especially of the apple, much more thought is being given to the character of the trees that are purchased from nurserymen, the growers of trees.

With the higher values that have been received for fruit for the past four or five years, there has been more or less discussion upon the value of better grown trees and of those that have certain character or quality, the result of breeding, or which possess pedigree power or influence. There has been some advertising by a few nurserymen of pedigree trees who have used the term "pedigree trees" or "pedigree stock" in a misleading manner. Pedigree means lineage, line of ancestors from which there are descendants, the history of whom may be traced or known.

In order to obtain a tree of pedigree quality, of certain fixed characteristics a cross would have to be made between two varieties, with a definite purpose in view, to secure in a fixed form the special qualities of one or both of the varieties selected. The seedlings from this cross would have to come into bearing, and those that showed in their fruit the characteristics or a tendency in that direction would be selected and again crossed to obtain a higher degree of approach toward the standard desired; and this method, which requires years of careful, painstaking work in cross fertilizing and selection, is not to any extent attempted by the nurserymen in our country.

This work is done mainly by individual horticulturists, who from the love of their occupation and love for investigation give years of patient toil and study and keep careful record of the processes employed and the results obtained.

The late Stephen Underhill of Westchester County, N. Y., though beginning late in his life, produced some most interesting results in obtaining seedlings from crosses made from the Roxbury Russet, Newton Pippin, Northern Spy and Rhode Island Greening varieties. His main object was to produce if possible varieties that would possess or have intensified the high quality in flavor of the present kinds and to have better adaptation to the locality where they were produced. The Northern Spy while one of the best flavored of all winter apples with its crisp, juicy, tender flesh is of no value in Southern New York, or in any section where the autumn temperature is mild and prolonged. Under such conditions the fruit ripens prematurely and is of little value.

On one occasion very late in the spring, Mr. Underhill gave a specimen of a cross made between the Roxbury

FIG. NO. 1—A PEDIGREE KING TREE

Russet and Newton Pippin to an Irish workman on his place for his opinion. After eating a portion of the apple, he replied with true Irish wit: "An certainly it is very foine; it has the dryness of the russet and the juiciness of the pippin."

While the work of tree breeding is very limited there is value in using the principle of selection in the propagation of nursery trees. Trees represent individuality and of the same variety they differ in many points. This difference in character of growth, productiveness, quality of fruit, and hardness, is in obedience to the law of variation that is ever asserting itself in the development of plant life. Bud variation may be greater upon an individual tree, according to its environment, exposure to the sun and the abundance or deficiency of plant food available. Nurserymen have here a field of immediate value in the propagation of nursery stock, by selecting their budding material from trees that represent the best development in constitutional vigor, in productiveness, in uniformity of production and in the quality of fruit produced. Persistence in bearing or in approach to annual bearing is an important quality and one of large value in orcharding. Where there is this tendency, aided by nutrition liberally supplied, the propagation from individual trees of known quality and record through this principle of selection makes it possible for the nurseryman to build up a stock of trees that will have much higher value than those that are propagated from any kind of immature trees standing in the nursery rows with large variableness in several points.

In going through a bearing orchard of any variety of apples, it is surprising to note the variation in the form of the trees and fruit that will frequently be seen. In the development of young orchards, individual trees may be found that begin to form fruit spurs, and to set fruit freely at three, four and five years of age, while others of the same variety will require twice that time. In the selection of buds from these individual trees, with which to propagate nursery

stock, the chances are that a certain percent of the trees so propagated will have the quality of early production accentuated.

While studying and working with 10,000 trees at "Orchard Farm" where we have orchards of different ages and stages of development, I have noticed great difference in trees of the same age and under the same conditions of soil and culture. We are now working to obtain a higher production per acre by more uniform bearing of the trees. At four years from time of planting, using generally two year old trees from the nursery, a number of trees will begin to form fruit spurs freely, while others will not, and we are following a system of selecting buds and grafts from the individual trees showing marked qualities. The King was thus worked upon Northern Spy trees and in twenty years there has not been a branch attacked by Canker, the chief cause of the losses that are heavy in orchards of this variety. Fifty per cent of the trees in a King orchard will die from this disease in twenty years, as they are ordinarily propagated from the nursery.

The types for this work were obtained from an individual tree in Tompkins County that had reached thirty years of age and was then in good condition.

In Illustration No. 1 a tree is shown that at seven years produced a very heavy set of fruit. This tree was worked with grafts taken from a tree of very strong individual characteristics, producing heavy annual crops.

The work of selection has been carried out with Sutton Beauty to the third generation. Illustration No. 2 shows the second generation top-worked with scions from an ideal tree and they show much uniformity in many points, while the tree in the third generation shows the good qualities intensified.

Figure No. 3 is a Wealthy tree but four years planted which produced nearly ½ bushel of perfect apples.

FIG. NO. 2.—UNIFORMITY OF SUTTON BEAUTY TREES
All descendants of same ancestor

In the cultivation of the Wagener, certain trees were observed that began to bear fruit at three years of age and continued to fruit annually, the apples being thinned each year.

During 1908, one young tree topworked with scions taken from the best of the individual trees produced from over two hundred sets, one hundred and thirty-six perfect apples, the fourth year from the time the scions were set, the tree being two years old when topworked. While the Wagener is a variety that bears early, there are trees five years planted that have not yet borne fruit.

It is along this line of selection that a most interesting field is open to the nurseryman and some are already making long journeys and expending considerable money to find ideal trees with strong, individual qualities from which to take buds to transfer to their nursery stock. With millions of trees being planted annually and with vast acreage of orchards coming into bearing, less apples are produced than ten or fifteen years ago. While from 36,000,000 to 69,000,000 barrels of apples have been produced in a year, we have been keeping down in the range of 23,000,000 to 33,000,000 barrels for a number of years.

These facts in the face of the demands of our rapidly increasing population, together with prices so high as to preclude the masses from the use of apples, are giving rise to some serious problems affecting consumer and producer alike.

While nurserymen cannot spend the time or the money required to obtain and produce pedigree trees or valuable new varieties or seedlings, the field is a most valuable one for young men to enter, for, with the changing conditions of soil and climate, and with the effects that are produced by the ravages of insects and diseases, there is need for a class of trees that will be better adapted. In the meanwhile propagation from selection will be a present help and has in it possibilities for largely increasing the productive capacity of orchards.

FIG. NO. 3.—A FOUR YEAR WEALTHY

GARDEN VEGETABLE SEED GROWING

By Burnet Landreth
Bloomsdale, N. J.

PREVIOUS to the American Revolution there does not exist any record of seed growing in this country, but now this branch of agriculture is of the greatest importance, both as regards the acreage and the product.

Any gardener or farmer can save the seed of any kitchen garden vegetable, ornamental flower or other plant which naturally matures its seeds in his climate, but seeds saved by an inexperienced person are not reliable for many reasons, prominent among which are the following:

First:—However good the source of the seed saved in this way, its blood may be badly mixed with that of another type of the same family but of different shape, size, color, period of ripening or of other habit; for example, one form of cabbage a pointed sort, may be intermingled during the blooming stage with a flat-headed form, producing a blood admixture which is called a cross.

Second:—A person inexperienced in approved type of kitchen garden vegetables and flowers will gather seed from individual plants which should have been thrown out of the crop before blooming, for after blooming the seed from the good plants may be infected with the blood of undesirable sports or reversions "rogues" as they are called. Experienced seed savers detect these at once, and throw them out before blooming.

And even the professional seed grower cannot always produce absolutely reliable goods. There are some problems confronting him which are inevitable: but the professional grower has the advantage over the inexperienced one in that he is posted right up to date on all the information bearing on this subject. These problems and the high grade to which scientific knowledge about them has been perfected, are very interesting. A discussion of these problems and the natural laws which cause them may be worth while.

In plant life there is always noticeable in broad fields, even by a half critical observer, a disposition among individual plants to fly off at a tangent, due on the one hand to a reversion to remote ancestors, and on the other hand the result of accidental cross-breeding; but further, to very critical students there is often observed a general change of character throughout the entire field. This change covering an entire crop is seldom the result of accidental cross-breeding for that only noticeably affects a few particular plants, but the entire crop alteration is caused by some past circumstance of climatic conditions under which the parent seed was developed and harvested.

No causes are so productive of changes in the behavior of plants as continued rain or prolonged droughts; either of these conditions start functions to work which have been inoperative under normal circumstances. Excessive rain or irrigation turn the growth to the making of stem and leaves, while excessive drought diminishes the stem and leaves and develops bloom.

To illustrate; this season on Bloomsdale Farm a twenty-acre field of radishes of the same variety and the same identical strain, one-half being from Bloomsdale seed crop 1907, the other half from Bloomsdale seed crop 1908, were sown in equal halves of ten acres each. The older lot of seed was grown during a continuously wet summer, and the others grown during a continuously dry season. There was observed in the foliage of plants grown from seed matured during the wet season a vigor of growth fifty per cent stronger than that of the plant grown from seed ripened during the dry season, yet in both cases the roots were about the same.

Particular habits of plants can be established or fixed over the entire crop by growing for a number of years under an influence which causes that crop to produce variations in habit. There thus is open to the students an almost illimitable field for interesting experiments. On a soil of extraordinary fertility or on soils kept exceedingly moist by irrigation the foliage grows thin as tissue paper, or on the other hand on soil dry to the verge of destruction of the crop, the foliage develops a thick succulent habit. Growers of alfalfa in the West notice a difference in the crops produced from seed grown on irrigated and unirrigated land, the latter being more resistant.

Most gardeners familiar with the normal size of bushes of egg-plants and peppers will be astonished to observe these same plants in the West Indies, when grown from seed produced for successive generations in the tropics. There the egg-plants and peppers sometimes reach five or six feet in height, and tomato plants grow to the dimensions of a large grapevine, all of them making solid wood and having changed from an annual to a perennial plant.

Metamorphoses in inflorescence may be observed in the smallest garden and by this we mean one of the organs of a plant taking up the functions of another organ, and a special structure and habit being evolved, of which the changing of certain flowering branches of the grape to tendrils or climbing organs is a good example.

Double flowers are metamorphoses often brought about by the process of starvation, a check to the vital forces. Carnations grown in plots where the roots are confined, and the atmosphere very dry, produce more double flowers than when grown in the open garden. The English single flowered daffodils, habituated to the damp climate of England, when taken to the dry climate of Southern Italy, always turn double, while on the other hand a reverse condition appears when plants habituating dry climates are taken to a wet one.

All forms of garden vegetables display a disposition to change in habit seldom for the better, but generally for the worse, and it is the business of the intelligent seed grower to keep them in their proper place. A very familiar example of this falling away from their original size and merit is noticed in the peas, Pride of the Market, and Strategem, which are not half so showy now as they were years ago. In truth most stocks of those now sold are no more like the original than the moon is like the sun.

What can be done in development of species by intense cultivation and selection has been clearly demonstrated in Europe in the case of the sugar beet. Previous to 1790 when it was first practically promoted as a sugar producing plant, it only contained seven or eight per cent of sugar now the sugar content has been brought up to twenty and even twenty-two per cent. While it has taken one hundred years to develop the high sugar content of the beet, the same thing can be done in ten years with the sweet potato, because much more is definitely known respecting vegetable physiology, cross-breeding and plant nutrition. Barley and wheat in England, and field corn in this country, have been greatly improved by selection and hybridization.

Any gardener, however small an operator, can undertake the improvement of any particular vegetable or flower, for example, among garden vegetables, egg-plant and salisfy might be greatly improved. An amateur can make these improvements as well as a professional gardener.

Seeds are very different from other commodities, for if a farmer purchases adulterated sugar, tea or coffee, or a piece of inferior machinery, the harm is done through the final use of the poor article, but with seeds it is radically different since they perpetuate themselves and the good or bad qualities are continued.

THE NURSERIES OF THE NETHERLANDS

By Ant. Goossens
Newark N. Y.

ONE hundred years before Christ the first inhabitants settled in the Netherlands (or Holland, so called more generally since the 16th and 17th centuries). The settlement or colonization of those natives took place in a location about twenty to twenty-five miles from Rotterdam, eastward between two rivers, the Rhine and the Meuse. On account of its fertility, they called this location, "bat-ouwe" (good soil or ground) and they, themselves, were called, "Bat-aves," which might be translated as, having good ground. North of the Rhine they found bare, unfertile soil, and called it, "Vale-ouwe" (bad ground); this soil consisted principally of an unfertile sand which qualified as heath; the other soil was clay, a thick mud solution, separated from the waters which carried it from Switzerland, Germany, Northern France and Belgium. An analysis proved that the Mosel mountain ranges, which abounded in a variety of slate, greatly contributed to the furnishing of this mud.

The lands surrounding the river banks, being lower and quite flat, were overflowed by those waters at regular intervals of ebb and flood-tide. The almost imperceptible but gradual deposit of this alluvium soil upon the shores of the streams or the sea has formed the greatest part of Northern and Western Netherlands. Seabound, as was the land in those directions, it will be clear that near the shores sea-clay was deposited, the fertility of which is greater than that of river-clay.

Courtesy of The National Nurseryman

A BED OF HYACINTHS—BOSKOOP DISTRICT, HOLLAND

Time came and with it civilization. The Crusades were the basis on which the bond slaves became free citizens; and, although before that time dykes had been put along the river banks to prevent repeated inundation, now, with the increase of population, the work was set about more forcibly. The sea, however, cooperated in a simpler but slower way. The range of dykes on the sea-shore are called, duinen, and have been thrown up by the North Sea from Cape Skagen (Denmark), north-western part of Germany, the Netherlands, and Belgium to the north-western part of France. The dominating west winds, at ebb-tide, whirled up the dry sea-sand and threw it up towards the land and in time formed hills; this range of hills extended for the above stated length with a width of from one to four miles, the highest point to be found near Harlem, the headquarters of the bulb district.

The lands, once protected from inudation, were laid out in polders, ditches and canals were dug in order to carry off the waters which are thrown into the streams by means of wind-mills. The Netherlands have a wet climate and consequently, those flat polders lying under sea and river-levels get an abundance of rain-water, which has to be carried away artificially. The expense of the preparations for farming will be well understood, but the fertility of the soil abundantly rewarded the pains taken, and the capital invested produced a high interest. · Cattle-raising was the principal business and up to this time the farmers have been able to maintain their reputation for first class cattle.

Nurseries are not found extensively in those polders, although Limes, Elms, Maples, Horse-chestnuts, Locusts and fruit trees thrive well. A special culture is, however, found there, namely, the Boskoop culture of Azaleas, Rhododendrons, Aucubas, Buxus, Hesc, Conifers, and other plants with earth-bulbs, besides Roses, Clematis and other climbers. Most of these plants may be grown just as well in a sandy soil, but nature has produced here a soil better fit for this purpose. And why is it better?

Where the water could not move freely, especially in lower parts of the ground level, grasses and aquatic plants grew up, which died annually and sunk to the bottom. Their decay was prevented by the water itself through which the air could not penetrate freely; after centuries of this alternate growing and dying process a mass of from three to twenty feet in thickness was formed. After the polders were laid out and the waters carried off, the aquatic plants gradually disappeared and grasses alone remained, which at the present time forms the principal food for the cattle. Air and sun-warmth, after plowing and digging the surface, decayed those plant remains and furnished an excellent soil. This remains damp all the time, for the surrounding ditches and canals are kept at a certain water level, the wind-mills only throwing out the superfluous water. Since these polders are below sea and river levels, water may be run onto the land from the said canals and rivers when necessary, by a simple opening of the sluice-doors.

The bulb district is, however, bound to a certain locality, near the sea-dykes, a stretch of country which extends between two cities, Leiden and Alkmaar. This soil is called in the Holland language, "geestgrond," a mixture of the sea-sand and the under ground. The breadth of this strip of land is from four to six miles. Science may eventually reveal the secret of that wonderful adaptation; experiments are being carried on for this purpose in other parts of Holland with partial success, but not with the profit that these bulb growers secure.

The enormous kinds and varieties in the ornamental line: Hardy Ornamentals and Forest Trees, ornamental shrubs, Conifers, and other evergreens are found on the sandy soil, or more

accurately a mixture of sand, humus and loam. These ornamentals are abundant in the eastern and southeastern parts of the Netherlands and also on the heath and clay-strips along the smaller rivers.

Although the Netherlands are a small country, these three nursery districts are well worth inspection. Visiting Holland, the bulb district may be reached from Rotterdam, via the Hague to Leiden in about one and a half hours. One may see the Boskoop culture by traveling from Leiden by rail to Alfen, thence by boat to Boskoop. The Ornamental Tree, Shrub, and Conifer district may be visited from Boskoop via Rotterdam to Oudenbosch. Well arranged, the trip would not last more than four days, especially when nurserymen get notice of the arrival of parties.

Courtesy of The National Nurseryman

THE CONGRESSIONAL FREE SEED DISTRIBUTION

By S. F. Willard, Sr.
Wethersfield, Conn.

THE first Congressional appropriation for the distribution of free seed was made in 1839. A certain amount of seed had been, however, donated before this date by individuals, and distributed through the Patent Office, there being no Department of Agriculture at that time. There was an urgent need in those days for the distribution of improved varieties of corn and grains, as well as improved agricultural implements to the more isolated parts of our country. At that time transportation facilities were slow and so limited that improved varieties of seed and new implements for cultivation were little known outside of the locations in which they originated or were manufactured. Conditions, however, changed rapidly, and for many years now it has been possible, even in the most remote localities, to purchase all varieties of seed from local dealers, or from mail order seedsmen through their catalogues.

Nevertheless, the appropriation for the purchase of seed did not diminish, but rather increased from year to year until 1865, when it amounted to $61,000. It was at this time that the Department of Agriculture was organized, and the distribution of garden seed was turned over to the Commissioner of Agriculture by the Commissioner of Patents. The appropriation continued to grow and in the next twenty years ranged from $81,000 to $100,000. In 1905 it had reached $290,000, and for 1910 the appropriation reaches the high mark of $317,960. This enormous appropriation has been made in spite of the strong opposition which has

sprung up in the last five or six years. This opposition and desire to have it done away with is wide spread: from the Department of Agriculture itself, also the State Experimental Stations, some State Legislatures, practically the entire Agricultural Press, the National Grange, and other farmers' organizations, to men representing the various agricultural interests of the country, including Seed Merchants and Seed Growers.

Who then is in favor of this seed distribution? Congress is, and Congress alone. That being the case, Congress can be doing it for none other than political reasons. It is because the practice enables Congressmen to keep in touch with their rural constituents, many of whom are no doubt pleased to be remembered in this way by their Congressman. Strange as it may seem, Congressmen, especially those from the rural districts, consider this distribution a valuable political asset. They are, therefore, anxious to distribute these petty packages of common garden seed in as many different communities as possible. This year (the 1910 Distribution) each Senator and Representative will be allowed 20,000 packets of garden seed, and 2,000 of flower seed. Some are so eager for these seeds that they often borrow from their fellow Congressmen part of their allotment.

It is a well known fact to all who are in any way interested, or familiar with the situation, that it is not new or rare varieties which Congress purchases, but rather the cheapest and most common sorts, so that there shall be the greatest possible bulk. There is no attempt made to procure even reliable stock, a good germination being the only requirement. The seed distributed is often improperly labeled, both as to the variety and kind of seed. Packets labeled Cucumber, have been found to contain Spinach seed, and fair specimens of Kohl Rabi have grown from seed labeled Cabbage. This is possibly due to careless handling of seed bags before filling the packets; an explanation which is, however, not an excuse. Think for a moment of the injustice to seeds merchants by the free distribution of this enormous bulk of seed to the very people whose patronage they are continually soliciting. It is true that quantities of this seed are never planted, and thus to some extent the distribution is simply wasted. The figures given, however, do not represent the total expense to the government; the Post Office Department has to handle this great bulk and gets no revenue from it. This is in part the cause of our large annual Postal Deficit.

Of course, as far as expense goes free seed distribution is considered by Congress a petty matter, hardly worth a passing thought. A few, however, are ready to discontinue the practice, because of its absurdity and uselessness, but the great majority demand the appropriation and are very jealous of their (rights?), the real purpose of the distribution seems to be entirely lost sight of. With the trend of public opinion so against the practice, and with the splendid way in which other agricultural interests are so efficiently looked after by the Department of Agriculture, State Experimental Stations and the Agricultural Colleges of the various states, this ancient humbug might well be abolished and become a thing of the past, to be forgotten as soon as possible.

NURSERYMAN vs. PROFESSIONAL LANDSCAPE DESIGNER

"The Retort Courteous"

Rochester, N. Y.

Editor, CORNELL COUNTRYMAN,

Dear Sir:

The several articles on Landscape Architecture in your December "Landscape Number," I have read with much interest and pleasure. I trust you will continue to devote some space regularly to the purpose of the further education and enlightenment of your readers in the matter of landscape development.

Should you do so, I should like to take up the issue, not in defense of Mr. Boehler, who, I feel, needs none in his admirable presentation of the nurseryman's position in landscape work, but, rather ,to reply to the appended comment of the "Rural Art Department" and its wholly unprovoked assault upon Mr. Boehler's subject.

It first assumes and asserts what is not even implied by Mr. Boehler, and in such assertion and assumption, displays not only a gross ignorance of, but a blind injustice to, the methods pursued by the nurserymen in promoting business through a landscape department.

The "Rural Art Department" seems to have "gone into the air" instantly with the impression that any essay on the part of a nurseryman into the field of landscape designing and construction should be squelched at all costs, and without consideration or hearing. The mere thought of it seems to have the effect of a red rag to a bull. It savors strongly of petty jealousy, but I am disposed to attribute it to a more creditable cause, the defense of professional ethics.

Surely there is ample opportunity for the nurseryman in this field without encroaching upon the province of the reputable landscape architect. Such a one need not feel, neither, I am sure, does he feel, the least concern that his future is threatened,but would, I believe, regret the ill-advised attack on the nurseryman in his endeavor to increase business by purely legitimate methods.

Note the thoughtlessness and inconsistency of the statement that anyone undertaking to build up a business based on the results of developing their own designs should neglect the element of good taste! The keynote of any degree of success!

The nurseryman of today who has achieved any measure of success in his landscape undertakings, has necessarily earned such success purely on merit. He is either himself a trained, technical man, who has combined his profession with the nursery business, or lacking this, has surrounded himself with those who could supply these requirements.

Therefore, logically, the designer of the landscape department of a nursery is just as careful in the display of good taste in his designs as he could be were he in business for himself. It is just his ability and taste that will determine the success of his de partment in bringing increased business for the firm. He could not afford to jeopardize future business by taking advantage of any opportunity to "stuff" an order by using more stock than would be consistent with good taste.

The designers of the nursery landscape department are recruited largely from the same schools that produce the professionals. They are professional designers by training; commercial only by occupation. In this close relation with the nursery they surely do not lose any of the benefits of their training; they are pursuing exactly the same methods and is it not reasonable to assume they are also adding to their practical knowledge of

horticulture more than would be possible in a purely professional pursuit?

Shades of Ham! (and surely they should be darker than those of Bacon) after graduating a student with the usual quota of the alphabet affixed to his name, are you, Mr. "R.A.D." going to denounce him as a fakir because he offers his wares in the most profitable market?

One does not think of criticizing any firm that sends out salesmen on good salaries to get increased business. One doesn't feel that he has to pay more for their goods because of this. Why then, should not the nurseryman employ good designers to also increase his business? The designs are the salesmen; the better they are, the more business they make. If the nusreryman believes it is to his interest to extend this service to his customers gratuitously, why infer this goods will cost you any more?

In the success of the landscape department of the nursery as exemplified by several of the large nursery concerns, one can read the judgment of the public. It has been most convincingly proved that there are, all over the country, many of those who are glad to take advantage of the offer of the services of a skilled landscape designer to help them in properly developing their property; who believe that in their particular case their interest will be as well served by this method. On the other hand, there will always be many others who will, for various and obvious reasons, employ the professional.

So as I say, there is room enough for all, without resorting to crimination or incurring ill feelings, and suggest that Mr. "Rural Art Department" put his little hammer right away in the tool-box.

A. L. Rose,
Mgr. Landscape Department,
Brown Brothers Nurseries.

Dec. 15, '09.

THE FRUIT SPECIAL

By A. N. Observer

THE fruit show, which was held at the New York State College of Agriculture early in November, was such a tremendous success not only in quality and quantity of fruit displayed but also in its educational features, that the idea was conceived of putting it on wheels and showing it to a part of the growers in the State. As the plan developed, it seemed most feasible to invade the premier apple region and to show it to the big growers in the Lake Ontario region.

Accordingly, the Fruit Special, the third farm train to be sent out from this college, left East Ithaca on Monday, December 6 to begin its 584 mile trip. It did not return to the "Lower Station" until Friday evening, December 10, when it had made 76 stops and had shown itself to 15,000 people.

The frontispiece illustration shows only one of the exhibit cars, and can in no way illustrate how attractive this fruit looked. In the foreground is the variety collection; one hundred and fifty varieties gotten together from all over the United States. In front of the second two boxes are a few plates of grapes, which made a very attractive addition and at the same time divided the variety collection from the comparative state exhibit which is located a little beyond and down to the third set of boxes. Numerous varieties from Washington, Oregon, Colorado, Montana, Utah, Michigan, Ohio, New Hampshire, and New York State are

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there. The idea of this part of the exhibit is summed up in the word comparison. And every honest judge must say that New York State, as shown by *its* best fruit, not only *equalled any* other State, as shown by its best fruit, but was far in advance of most other leading fruit states. This comparison was calculated to reencourage the New York State farmer, to make him see that he can grow as good apples as any other American citizen, and to strengthen the faith of other New York growers who really know what this State is capable of, but whose belief possibly may have been weakening.

There seems to be an idea more or less prevalent, that New York cannot compete with some other states in the production of apples. It may be that in thinking of New York State apples we keep in mind the small, misshapen, wormy fruit in the center of the barrel (if we are buyers), or (if we are growers) we may remember the big percentage of scabby, undersized, chop apples that *our neighbors* produce, and remembering all this, we unconsciously assume an average and label it New York State Fruit. And then we are prone to compare it with the uniform, first class, apples which we see placed on the market in such attractive shape by our Western brothers. Is it any wonder that so many farmers, who are fruit producers in a small way, sit down on their jobs and disconsolately watch the codling moths eat up their money, or go to sleep over dreams of Oregon orchards? (Elysian gardens to them.) This train was calculated to wake them up: and some 15,000 of them at least heard the alarm clock.

In the background of the picture is another variety collection, this time entirely from New York State, and includes quinces and pears as well as apples.

The boxes, arranged so attractively and yet systematically out of reach, show New York State fruit in California standard, boxes. They were the feature of the train. It seems to be the opinion of some growers in this state, that their apples cannot be packed in these boxes;

that their fruit is not the right size, hasn't good enough color, or for some other outlandish reason, isn't capable of being put up in boxes. But these twelve boxes did a lot to dispel that notion; they created a stir. To follow up this commotion, in the next car a professional western apple packer demonstrated how these boxes were packed and the necessary bulge obtained. He showed the different methods of wrapping the apple, the different kinds of packs and the number of apples each pack would accommodate.

In the other seat-removed car, the Departments of Economic Entomology and Plant Pathology showed the visitors all kinds of bugs and insect pests as well as several prevalent diseases. The codling moth and the San Jose scale where shown from their troublesome naked infancy to their treacherous senility. Fire blight, apple tree canker, fungus and apple scab were exhibited and explained in all their awfulness.

Here, as in the other car, (but to a less marked degree) two classes of visitors were noticed: those who were primarily orchardists and who came to discuss specific problems; and those who were only incidentally fruit growers who came into this car to learn to recognize the insects and the diseases. For the former, the use of lime-sulphur as a combined fungicide and insecticide seemed to be the most prevalent subject for discussion, and we feel sure they got some valuable information. To the latter group were shown specimens of the more common, injurious insects and diseases. The cause and emedy were the two ideas which those in charge tried to connect in those minds. Recognition was strongly impressed upon them for obvious reasons.

Was the train worth while? Some say it wasn't. It has been criticized from several standpoints. The most prevalent complaint is that the stops were too short; and in some cases this was true. The time allowed for some stations was such that as soon as everyone had been ushered in at one end, it immediately became necessary for some member of the crew to shout a warning, "All out." at the other end. Such performances could be but little short of farcial. It is to be deplored that the railroad officials, who made out this schedule, were not horticulturists and thus could not see the necessity of taking much longer at some of these towns than was necessary for a "transfer of orders," a "stop-on-signal," or merely a "whistle for siding." It might have been better to even have cut out some of the stations, so that more time could have been allotted the other and more important ones.

Another objection, and one closely allied to the one above, is that real scientific knowledge was not imparted. We must admit that this is true, but it could not be done not only on account of lack of time, but also on account of the lack of seating capacity, and other circumstances which were alike obviously prohibitory. This train was not meant to supplant the Farmers' Institute, nor yet to supplement it. Its educational value was bound up in its capacity to make an impression and to bring home practical problems, not in the abundance of scientific theories explained.

Looking at the train in this way it was a tremendous success. It accomplished results which could not have been effected in any other way. It stimulated the lagging interest in horticulture, it revived faith in New York State fruit, and if it did not mark a new era for pomology, it at least announced that one is coming, and coming fast.

It reached some classes of people in a way that could have been done by nothing else. It appealed to farmers that never would go near an Institute or Extension meeting; its novelty aroused their curiosity, they came and were impressed. In a very cursory manner it hit the problem of keeping the boy on the farm; it

perchance, opened his eyes to the possibilities, fortune and success in fruit growing in this state, and did much toward attracting him back into a contented state of mind. The fact that influential business and railway men were interested to the extent of sending this train to help him face his problem, did more than a little toward strengthening his faith in an occupation over which he may have been, just then, much discouraged.

It reached the school children; they came by grades and even entire schools, their teachers piloting them around. They entered the car boisterously, eagerly anticipating a feast of fruit. But once inside where they could see the magnificent display, they were so awed that they did not even think of asking for an apple. Was not this a sign that they were impressed? That their opinion of their father's business was raised? that an ideal apple for them was something grander than they had ever known before? Whatever ideas they got, they will keep as long as they live, for they saw at the most impressionable age.

The train reached the city people. Stops were made for big crowds in Oswego, Rochester, Batavia and Geneva: the Syracuse, Rochester and Buffalo papers were full of it. The city folk were interested and they heard all about it. Was not their opinion of the rural life and its present and future social status raised? The train did much toward commanding their respect for the farmer: and this interest and respect are exceedingly worth while. Has not the fact that city folk looked down on farmers in the past been one of the greatest causes for the migration of our country population to the city? Anything which tends toward an annihilation of this feeling is intensely worth while.

Besides the direct benefits from this interest aroused, the train drove home some intensely practical ideas. The box idea created more than a stir. And the specimens of San Jose scale and Fire Blight exhibited in the second car brought the growers up standing and face to face with their problem. One old farmer was heard to observe as he left the car—"What a durned fool I am! Here I've been selling my apples in barrels for the last forty years. A box would fetch as much as a barrel and hold only one-third as much fruit. Just think of the money I've lost! If I had it now I could lift that mortgage.

"And that San Jose scale, why I've had it now for two years but thought it was just dirt, you know we've had dry seasons for a couple of years back, and I thought perhaps the trees hadn't gotten washed off clean."

Another benefit which this train accrued, justifies it if nothing else does: and that is the benefit derived by the members of the faculty and the students present from the informal, contact with the practical growers. The professors in this college have an immense influence all over the country and the students who graduate from under them are bound to acquire prestige. There is a good big chance for them to get one sided, too theoretical, out of sympathy with the practical men whom they are in duty bound to assist. What could be better than this informal, bare-fact association and discussion, necessarily to the point because of the brevity of time? It cannot help but inspire confidence on both sides; we can stand more confidence and willingness to be open to conviction.

Was the train a success? We have little doubt of that when we note that men like B. J. Case, Samuel Frazer, and E. W. Cathpole gave two days of their valuable time to accompany the train and assist in the good work.

Was the train worth while? We sincerely believe it was. We are looking now for an animal husbandry train.

CARE OF THE EYES

[CONTINUED]

By George M. Gould, M. D.

XI. PHYSICAL AND PHYSIOLOGICAL OPTICS

Light, the sensations of light and color, are caused by the tiniest of ether-waves started by the sun, electricity, burning oil, coal, gas, etc., and are reflected into the eye from every object upon which they strike. These light-making ether waves fly at the rate of about 186 thousand miles a second and they are so small that figures help but a little to make us realize the facts. The color of an object depends upon their size or frequency,—that of red being caused by waves striking the retina at the rate of about 400 millions of millions per second; the higher colors of the spectrum, blue and indigo, are made by waves passing about 700 to 750 millions of millions per second. The dimensions of these wavelets run from about .00007604 cm., for red, to about .00004059 cm., for blue. Bundles of these rays are gathered by the eye into a focus upon the retina and make the pictures we know of external things. The eye does not see, it is merely an optical tool for the brain and mind to see with. Light and color do not exist outside of the brain and mind; only ether-waves are outside of us, of different lengths and frequencies, out of which the sensations of light and colors and pictures are made, we have scarcely an idea how. The film and diaphragm of the best kodak cannot act so quickly as the retina which recognizes or responds to the stimulus of light lasting only the 0.00144 of a second. The retina is therefore made up of separate little mechanisms, in order that they may feel these tiny wavelets and respond to them individually. The retina may be likened to many millions of finger-tips, all bunched together, of a million handed giant, held out to the ether-waves; upon these is laid the warm picture of the ether-waves by the eye, and we feel or see how the outside object or scene is shaped and colored. The eye can see an object 1/1000 of an inch in diameter. The little fingers or nerve points ("rods and cones") are from 1/10000 to 1/14000 of an inch in diameter, and a million of them are crowded together in the space of one-tenth of an inch,—all holding their tips out to receive the light. From the retina to the brain run as many as 425,000 nerve fibers, each a little telegraph wire, insulated so its message may not get mixed with that of another. But this nerve-force going from the eye to the brain with its innumerable messages travels only at the rate of a little more than a hundred feet a second,—quite a different thing from the sun's rays traveling at the rate of 186,650 miles per second. We are wonderstruck and grow almost dizzy when we try to understand or even imagine how this is done, and how it was all contrived with such infinite ingenuity and kindness. Our awe should serve to keep in our mind that the proper use and care of a mechanism so beautiful and beneficent as this should be guarded as the most precious of the gifts of life.

XII. ATTEND TO THE EYES OF THE CHILD

One of the strangest things in the world is the common indifference to, and ignorance of the dangers to the eyes from diseases of the eyes themselves, from their abuse and overuse, from poor and unequal vision, etc. Parents are constantly saying, "O, it's nothing but the eyes, don't bother about them!" School teachers have punished and whipped thou-

sands of children, supposedly for laziness, naughtiness, or stupidity, when in reality the child could not see the blackboard, could not read the book, at all, or only with pain, etc. The greatest duty of us all is to get the child started rightly and healthily in life. The worst misfortune and handicap is ill-health, so fixed and certain, that when manhood or womanhood has been reached one cannot compete with the others in the life-race. After good character, our chief concern should be to outfit a boy or girl with the soundest body possible. The evils and trials, the poverties and sufferings, even the early deaths, of millions could all be avoided by attention to their beginnings in youth. Every observant physician knows well enough that in the young the cure of ocular and other diseases is much easier than in those who are older; he knows also that the chief causes of ill-health, invalidism, and life-long wretchedness are likely to show themselves in youth; he is also beginning to learn that, as a rule, these causes and all their effects may be stopped, if the right methods are taken in youth.

This is especially true of the diseases of the eyes, themselves, and of diseases of the body due to diseases of the eyes. Everybody knows and yet nearly everybody fails to appreciate to the full the old fable of "the belly and its members." One can scarcely have a disease of one part or organ, alone, leaving every other part entirely uninfluenced. This is emphatically so concerning the eyes; their faulty shapes, and bad working are indeed the greatest of all the sources of ill-health and misery.

We have in previous articles urged that merely as instruments or tools for seeing with, the eyes may become unfit, injured, or blinded, in many ways too commonly overlooked and disregarded. We have warned as to the care of the eyes of the new-born baby, as to diseases of the lids, of the "white" of the eyes, of the cornea, and of other parts. A word may be added as to crossed, or turned in eyes,—"strabismus," or "squint" as this trouble is also called. This is altogether too common; it is unnecessary, and in childhood, it is curable. That is, it is curable if intelligently treated when it begins. It is due to the fact that the eyeball is not mathematically correct in dimensions or shape. It is curable by glasses,—if these are of the accurate kind needed. Don't let anyone persuade you to "let it go for a while," or that a surgical operation is necessary. An operation cannnot make the visual acuteness any better even if it does bring the eye "straight." Only spectacles will do that, and if these are ordered early enough, they will make the eye or eyes straight, and will also secure the necessary sharpness of sight. Whenever an eye habitually turns in toward the nose, take the child at once to an oculist who says he can straighten it by glasses, and without operation. Every week passed in neglect injures the vision still more, and more, and before long the lost sight can never be made good again by any means whatever. Do not permit the boy or girl to become a one-eyed "grown-up." The good eye, that not turned in, also needs glasses to keep it a good eye!

THE 1909 NATIONAL APPLE SHOW

By W. G. Brierley, '06

THE second Annual Apple Show was held in Spokane, Wash., during the week of November 15 to 20, 1909. The main building, the National Guards Armory, was used primarily as headquarters for the officials and judges, for the meetings of the different societies and organizations, and for the plate display of varieties. While a vacant lot on the opposite corner diagonally across the street, together with the intersecting thoroughfares, was covered with a huge spread of canvas sheltering approximately two and one third acres. Under this tent were placed all the different kinds of bulky exhibits, especially the large exhibits of apples as they not only needed the room, but also the cooler temperature afforded by the tent.

The judges for this Show had to be selected with great care, as the large prizes at stake and the keen rivalry between sections demanded a judging staff of rare tact and ability, men who were also familiar with the special conditions found at such a show. Prof. H. E. Van Deman was chosen as presiding judge and his associates were: Mr. George J. Kellog, of Lake Mills, Wisconsin; Prof. W. J. Green, of Wooster, Ohio; Mr. A. P. Batetrain of Mosier, Oregon; and State Senator H. M. Dunlap, of Iowa. These men ably carried out their task, giving entire satisfaction to all.

While the Show aimed to be National in its scope it was hampered by other fruit exhibitions in other sections, so that it really represented only the North West section comprising Oregon, Washington, British Columbia, Idaho and Montana. Most of the important districts in this section were represented in the various exhibits, but the ones most prominently represented were,—the Yakima, Wenatchee and Chelan Countries in Washington, and the Rogue River Country in Oregon. The Palouse Country of Washington also had prominent displays, but not so noteworthy as the ones first mentioned.

The many classes or divisions under which entries were made included car-load lots, booths, a "special," or individual display, ten box, five box, and one box limited displays, the variety plate exhibit, the fifty apple display, the big apple contest, etc.

The car-load exhibits were by far the most conspicuous features of the show. They were arranged in the center of the large tent-covered area on long, A-shaped racks built strong enough and large enough to hold the weight of two car-loads of six hundred and thirty boxes each. Each car-lot represented a gross weight of about fifteen tons, so of necessity these racks had to be rather firm and on solid ground. In most of these displays the six hundred and thirty boxes were arranged in long rows of ninety, side by side and seven tiers high. All of the thirteen carloads entered were very attractively displayed, being artistically and tastily decorated in colors which harmonized with the colors of the apples. Indeed, they were so tempting that it became necessary to protect them from the crowd by wire screens in front. These exhibits were judged on the merits of their general appearance, uniformity of grade, perfection of pack, color and freedom from imperfections. A car-load of Spitzenbergs from the Rogue River Country exhibited by Trouson & Co., won the first prize of $1,000, while the second and third prizes went to Yakima growers.

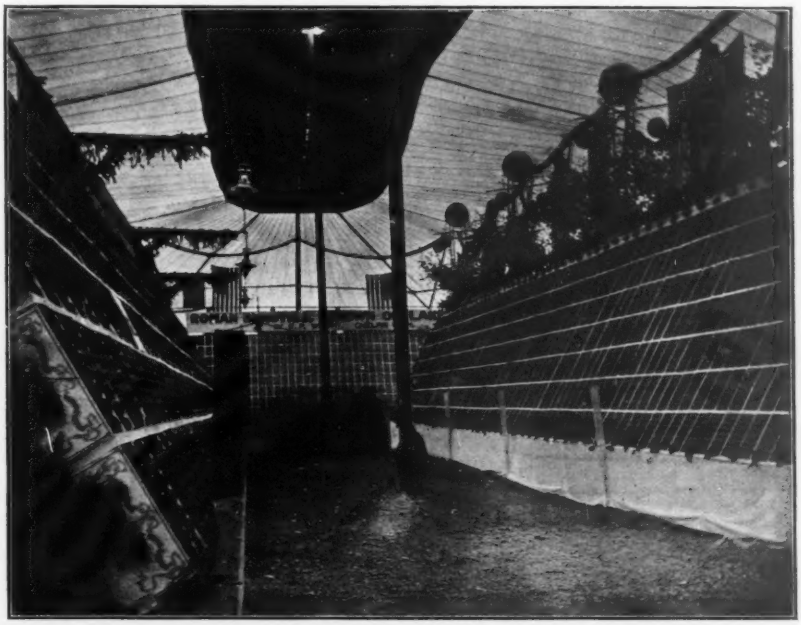
The booth exhibits were arranged around the outer walls of the tent, and being judged chiefly upon their artistic effect you may be sure they made a very attractive display. Most of the apples shown in these booths were packed in what is called a "quarter-box" which is of the same

size as the ordinary box except that it is deep enough for only one tier of apples. Some booths did not have many of their apples in boxes, but had them otherwise arranged to give a decorative effect. One booth in particular, exhibited by the Walla Walla Commercial Club, gave a very unique effect by having the apples arranged in rows all of one color and gradually changing from dark red at the base to yellow at the top of the stand.

The ten-box exhibits were placed on racks much the same as those supporting the car-load exhibit. The only restriction in this class was that the ten boxes should all be of one variety, but a grower could enter several different varieties in separate entries if he cared to do so. As the competition was based and judgment given on resemblance to variety, type, color, shape and uniformity of grading and packing, these exhibits showed some very excellent work along those lines.

The five box and one box exhibits were very similar to the ten box display and showed very high class work in grading and packing, and in selection for true variety, color and shape.

The "special" exhibits or individual displays attracted a great deal of attention and received very favorable comment, although there were not more than a dozen entries. This exhibit was not limited to any one variety, but had to include two barrels, two boxes, two baskets, two plates, and two jars of apples. Illustration (2) shows how one of the many and attractive decorative schemes worked out by the exhibitors. They were scattered around throughout the whole exhibit at the ends of the racks of ten-box and five-box displays, or wherever they could be shown advantageously.



A PORTION OF THE CAR LOT EXHIBIT
The car on the left (Yakima Spitzenburgs) took second prize.

The plate Exhibits, five specimens to a variety, were displayed around the edges of the main hall in the Armory, and some very fine specimens of apples were shown here.

Two other special classes were, the fifty-apple display, and the big apple contest. The fifty-apple display had to show, as its heading would indicate, fifty apples of one variety competing in size and uniformity. The smallest apples in this exhibit would weigh well over twenty ounces. In the big apple contest, an apple which

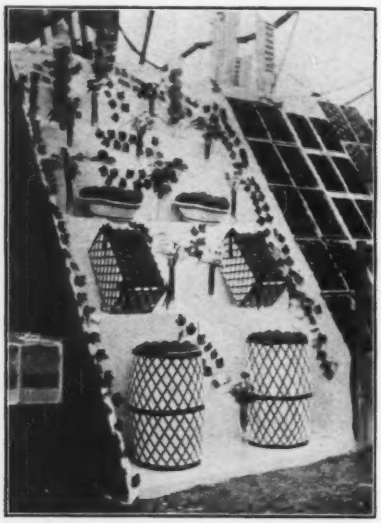


FIG. NO. 2.—"SPECIAL" EXHIBIT
Note section of Ten Box Exhibit on the right

weighed less than two pounds had no chance for first honors. The prize went to a Spokane Beauty which weighed forty-one ounces.

At various places, where they could be shown to advantage, the spray-pump people had their machines on exhibition, and some of the local nurseries had a display of specimen seedling and budded trees.

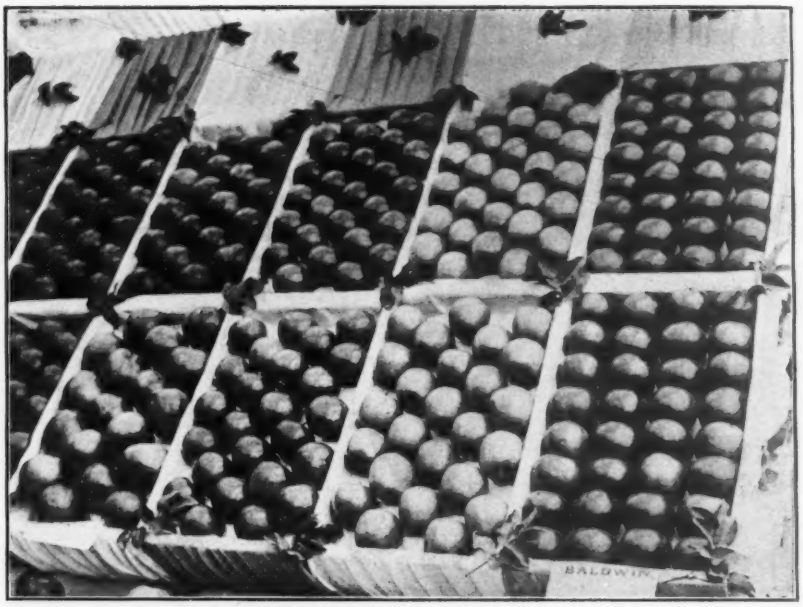
One feature of the Show which caused many cirticisms was the presence of some of the side-shows and fakirs from the A. Y. P. Exposition at Seattle. They had obtained some of the best locations which might have been used otherwise for booth displays; they made such a racket with their "barkers" and "Free Shows" that many exbibitors said they would not enter next year if this feature were to be allowed again.

On the whole, the packing as shown was very high class, although some of the booth exhibitors had trouble with their shallow boxes. An important decision was rendered by the judges in regard to the square pack. They scored down at least ten per cent on the car-lots which had over twenty per cent of their boxes packed in this style. The judges pointed out that where this pack was used, the apples coming directly over each other, afforded no chance for the taking up of the pressure of the cover without bruising all the apples in the end rows.

A lot of about thirty boxes which had been shipped West in barrels from a New York Commission House and hurriedly repacked in Spokane were set up where they could not easily be overlooked. They were badly bruised, wormy, and not at all well graded. None of them were as good as can be raised in Western New York, so it would appear that they were on exhibit to give a contrast advantageous to Western apples.

It was interesting to note the difference in color between the apples grown on low and high levels. The high-level apples whether irrigated or non-irrigated did not have the rich, high color common to the apples grown on lower levels. This is caused chiefly by the more sunshine and less humidity of the lower levels. The variation was so great at times that two specimens of the same variety coming from different sections would appear to be of entirely different varieties.

For novelties of note the Show produced the Red Gravenstein, Surprise and a new "Coreless." The red Gravenstein is simply a red "sport" of the common Gravenstein, but ow-



SOME OREGON BOXED APPLES, SHOWING DIFFERENT SORTS OF PACKS

ing to its more attractive coloring would appear to have possibilities in the future. The Surprise is a rather small apple, highly colored, and distinguished by a well marked suffusion of color all through the flesh. The "Coreless" was apparently a seedless apple of fair quality in which the core was partly eliminated. It will have to stand a longer test than the Show afforded before being accepted as a valuable variety.

The Show was unfortunate in having two very wet days. This caused the exhibits under the tent to become damp, the paper around apples in boxes so packed swelled, forcing the bulge too high, sometimes causing the apples to roll out of position, knocking others out with them and badly bruising the whole lot. Another unfortunate happening was the giving way of the supports under one car-lot allowing almost the whole exhibit to crash down into the aisle in a tangled mass. The damage was repaired with the loss of only thirty boxes, however.

In all other features the Show was a decided success. Over twenty-five thousand dollars in premiums were awarded to the exhibitors and a safe estimate of the amount of fruit on exhibition would be between twenty and twenty-five thousand bushels. The attendance was all that could be desired as the hall and tent were crowded nearly all the time.

In summing up, it would seem that the Show was of great benefit to the growers in the sections represented. They all met in competition and were all alive to any new ideas shown by any other grower. It is generally understood that the strength of the Western grown apples on any market lies chiefly in their rigid grading and careful packing. This Show, being in its very nature a competition in grading and packing, cannot help but raise an already peerless standard along these lines.

VALUE OF CO-OPERATIVE COW RECORDS

By W. A. Stocking, Jr.
Professor of Dairy Industry, Cornell University

THE first association in this country, whereby a number of farmers agreed to keep a record of the production of each cow in their herds, was organized in Michigan in 1905.

The first association in New York State was organized in Delaware County last spring, and is now in active operation. The dairymen are reporting valuable results already.

Their purpose is to enable the dairyman to know the relative value of the animals in his herd. This is entirely distinct from the testing which is being carried on for the purpose of establishing records for full blooded stock, in which case a part at least of the benefit of the work is that it enables the breeder to sell his animals at better prices. It is not intended to help the farmer sell his animals at an increased price, but simply to show him the actual value of his cows as producers.

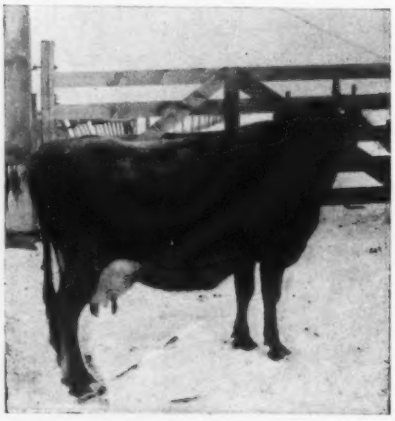
The usual plan is for a number of farmers to organize a testing association and agree to pay one dollar a year for each cow in his herd. With the money thus obtained a man is hired to do the testing work. This tester spends one day per month at each farm. He usually arrives in the afternoon in time to weigh and sample the milk of the cows at night and obtain records of the feed consumed. After taking the records in the morning the samples are tested and the results for the month figured up, and a copy left with the dairyman. The dairyman then carries the tester to the next herd, and so on during the month.

Several other plans have been tried but the above has proved to be the most satisfactory, principally because of the fact that it is the business of the tester to do the work at a definite time each month, whereas, if it was left for the dairyman to do, the temptation to neglect the work in the busy seasons is so great that usually the results are incomplete and not satisfactory. Another advantage in having a special man to go from farm to farm lies in the advice which he may be able to give the farmer in regard to the feeding and general care of his herd.

In order that an association of this sort may have sufficient funds for its work, it is desirable to have from 300 to 500 cows, distributed in not more than 26 herds, one for each working day of the month.

The cost of this work to the farmer is not large, and if it results in finding out one or two "robber" cows in his herd, it will more than repay him for the cost.

So far as known to the writer, the first systematic work done in obtaining records of herds in New York State was begun by our department of Dairy Industry May 1st, 1908. At that time the department arranged with twenty dairymen to send a representative to their herd one day each month to weigh and sample the milk and obtain a record of the feed



GOOD DAIRY TYPE
Lbs. milk, 7,054; lbs. fat, 284.4—Profit, $53.48

given the cows. This has been continued since that time, and the results obtained are of much interest and value. In order to show the nature of the results obtained from this work the record of a representative herd is given below.

HERD NO. 151

No. of Cow	Age Yrs.	Breed	Months in Milk	Lbs. Milk per year	Average per cent. fat	Lbs. fat per year	Money rec'd for fat	Cost of feed	Diff. between cost of feed and money rec'd for fat	Cost of feed to produce 100 lbs. milk	Cost of feed to produce 1 lb. fat
139—	8	Gr. Dur.	11	5696.4	4.66	265.76	$ 77.52	$ 30.43	$ 47.09	.534	.144
141—	6	Gr. Jer.	10	4682.5	5.36	251.33	74.89	30.81	44.08	.657	.122
138—	10	H. & J.	10	3996.5	4.32	173.00	46.66	27.89	18.77	.697	.161
144—	4	Gr. Dur.	10	3992.8	4.05	161.90	43.93	25.22	18.71	.631	.155
142—	6	Gr. Jer.	9	3488.9	4.26	148.71	43.91	26.09	17.82	.747	.175
140—	6	H. & J.	10	3482.5	3.91	136.36	35.43	25.99	9.44	.746	.190
143—	5	H. & J.	8	4008.6	3.32	133.21	33.13	24.95	8.18	622	.187
145—	3	Gr. Dur.	9	3461.2	3.44	119.11	32.51	26.89	5.62	.776	.225
Total	.....	.....	77	32809.4	33.22	1389.38	387.98	218.27	169.71	5.410	1.329
Average	....	.....	9.62	4101.17	4.36	173.67	48.49	27.28	21.21	.676	.116

It is interesting to note that one cow gave a profit above the cost of her feed of $47.09, while another gave a profit of only $5.62. One cow produced a pound of butter fat for 12.2 cents, while with another it cost 22.5 cents to produce the same amount. In other words the one cow gave a profit of 10.3 cents for every pound of butter fat more than did the other cow. The same general difference is shown in the food cost of producing 100 pounds of milk.

The owner of this herd might better sell the last four cows and take what money was necessary to buy one cow like the first one in the table. By doing this he would have a greater cash income and save the feed and labor of three cows.

After the poor cows are known, the owner can then dispose of them to advantage, and either replace them by buying better ones or by raising the heifers from his best producers. The writer knows of one dairyman who increased the average yield of his herd by more than 2000 pounds of milk per year per cow as a result of five years' records, and his herd was an exceptionally good one when he began the work. He now states that he would not think of keeping a dairy without a record of the production of each cow.

Another man has increased the production of his herd, since beginning to keep records, from a little less than 4000 pounds of milk per cow to over 12,000 pounds per cow per year.

The ideal method is for each dairyman to keep a record of the production of each cow, and men who have done this feel that they cannot afford to do otherwise. Many men, however, do not believe that the benefits will equal the increased cost in labor, and prefer to pay a small amount to a special man who will do the work for him. For this reason an association employing a special tester will usually give more satisfactory results, and this work is being agitated in several communities in New York State, and it is probable that in the next few months a number of associations will be formed. There is no reason why the average production of cows in New York State should not be higher than in any other state, and it is probable that this will be true within a very few years if the dairymen recognize the value of knowing the productive capacity of their individual cows.

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JANUARY, 1910

The Boxed-Apple Situation

There can be no doubt that the boxed apples on the recent Fruit Train made an impression. They appealed to the city man who is tired of the lottery of buying barreled apples. The consumers' sentiments all expressed a welcome for the establishment of such a custom here in the East: a custom whereby the buyer is assured of first class fruit *all the way through.*

The boxes impressed the farmer also and it is their attitude especially that we wish to discuss. Many prominent growers declared themselves for the box and not a few of them have decided to pack some apple that way next fall.

So far, this is all well and good. The train succeeded in creating a demand among the consumers, and in waking up the growers to the advantages of the box. But now comes the question, isn't there a possibility that the box idea was overworked? It is a common saying that the boxed apple is coming to the East, but the important question is, "Will it stay?" What will result if the growers determine to put a big proportion of their fruit into boxes?

We very much fear that these men will be surprised, yes discouraged, by the really small percentage which they can conscientiously pack in boxes. There is no room for misshapen, lopsided apples in the box; undersized fruit will not fit; every apple which goes into *this* container must be a prize winner. If the grower lets this revelation of the small amount of really good fruit he raises overwhelm him, he will, instead of seeking improved methods of production, yield to the temptation of filling in the center with one or two layers of wormy, scabby or fungoused fruit. *And such a practice, we firmly believe will forever kill the boxed apple in Western New York.*

One can hardly blame a disconsolate grower for putting in this inferior stock, it is but human nature. The fault comes in his getting discouraged. He *must* not do that. And to this end we would recommend that every grower resolve to divide the number of boxes which he has mentally decided upon, by at least four.

We would *not* recommend that *fewer* growers take up the idea of boxing their fruit: in fact we would strongly urge more growers to become enthused. But we would make emphatic the necessity of putting up only prize winning stock in this package.

The wisdom of such a course will soon become evident. The growers

will investigate how they can produce more boxing stock. The barrel containing no prize winners, will loose its lottery enchantment, will readily fall into quality's disfavor and create a demand for the boxed apple.

Meanwhile let us sort most rigidly and pack most conscientiously. Let us keep the motto, "Quality," constantly before us in this matter. If necessary, let us not hesitate to emulate our successful western competitors by governmental enforcement of honest packing. Above all, let us grow better fruit.

The Status of Agriculture in America

We are always pleased to have someone of another profession express a sincere interest in our calling. And when such an influential man as Wm. C. Brown, president, New York Central Lines, reveals such deep concern in American farming as he did in a recent speech before the Railway Business Association, we feel a renewed confidence in the profession we have chosen. It augurs well for the future of agriculture to have such men champion its cause.

What did he say? He traced the wave of population from the Grecian colonies along the Mediterranean a thousand years before the birth of Christ, westward to the eastern shore of the Pacific. He showed that nearly all the arable land on the earth has been taken up, "no longer can the homestead be had for the asking." Mr. Brown quoted statistical figures showing that the yields of crops per acre in the United States are steadily and very rapidly diminishing. He pointed out that, even though we pride ourselves the granary of the world, the United States is producing less than half the yield per acre that England, Germany or the Netherlands are: and this is so in spite of the fact that we have the most fertile soil and favorable climate in the world.

With no more new land and an ever increasing population we will some day come face to face with the problem, what must we do to be fed?, which was so clearly defined by Mr. James J. Hill in a recent issue of *The World's Work*.

We are exporting less and less. Mr. Brown showed a very interesting set of curves which had been charted from statistics of production and home consumption since 1868. "If the converging lines of production and consumption in the United States continue to approach each other as they have during the past ten years, before the middle of the next decade the last vessel loaded with the agricultural product of this country will have left our shores, and this great nation, like those of the Old World, will be looking for a place to buy the necessaries of life."

He pointed out that the natural solution of this problem of getting food is to increase the efficiency of our farms: the value per acre of our crops might easily be doubled by proper methods of seed selection, fertilization and cultivation. "The first requisite is a thorough awakening of our people to a realization of the startling significance, the overshadowing importance of this condition, then a systematic persevering campaign of education." He would push the reclamation movement: he recommends model farms owned by railroads and devoted to the practice of the most

advanced methods: he advocates more governmental farms instead of more battleships: he is thoroughly in sympathy with Belgium's required experimental plot in connection with every school. "I would make our agricultural colleges in fact what they are in name by limiting admission to young men who want to study and school themselves in scientific agriculture to the end that graduates of these colleges should be first class farmers thoroughly equipped for, and vitally interested in that most honorable profession."

We trust that the Legislature at Albany has heard all about this speech. We are wondering how many more men like ex-President Roosevelt, Gov. Hughes, James J. Hill, Wm. C. Brown, and L. H. Bailey it will take to make them see the necessity of larger equipment for agricultural education in New York State. If more men of this caliber are needed, we are looking for them.

The Intercollege Cross Country Victory

Elsewhere in this issue our readers will learn how the "Ags." did it. We wish to call attention here to the reason why it was done. Organization plus plenty of enthusiasm is sure to accomplish results and this was no exception. The squad, and it was a goodly sized one, ran every night *in a bunch*: and it was a remarkable fact that they kept in a bunch during the race; they got off together, ran together and finished reasonably well together.

It is an ancient plea for athletics that they teach team work. We wish to cite this race as an example of the advantages of that lesson. This team has learned what the race would teach; the lesson of organized effort. We trust they will put the experience thus gained to good use: there are numerous student affairs in the college which need some team work. They are looking for you, meet them half way.

A Correction

The COUNTRYMAN desires to correct a mistake which occurred in the December issue. The article entitled "Tubercle Bacilli in a City's Milk Supply" was written by Dr. Geo. W. Goler and not Dr. Geo. M. Goler as stated. A correction of proof, which did not, through an unavoidable mistake, reach us until too late, showed that the figures in W. H. Park's investigations were 57 autopsies, and 20 per cent bovine results instead of 67 autopsies and 23 per cent results.

An Artistic Editor

The COUNTRYMAN is to have an artistic Editor. An amendment to the constitution providing for one was passed at a meeting of the COUNTRYMAN ASSOCIATION, Dec. 14, 1909. Competition for this office will run until February 15, 1910 when the best artist will be elected to the board. All who would like to enter this competition will register with the editor at once and obtain further particulars.

Index to Volume VI

The COUNTRYMAN announces that the Index to Vol. VI is finished. It will be sent free to subscribers requesting it: a charge of ten cents to non-subscribers has been affixed.

GENERAL AGRICULTURAL NEWS

Pure Insecticides and Fungicides

At the last session of Congress a bill was introduced in both the Senate and House providing for the government control of the purity of insecticides and fungicides in much the same manner as the purity of foods and drugs is now controlled. With the increased use of manufactured insecticides and fungicides it has become very necessary that their quality should be standardized so that definite recommendations for their use may be made with accuracy and so that adulterated and inferior articles may not be imposed upon the farmer. Practically all of the large manufacturers of insecticides and fungicides are heartily in favor of the measure which is drawn to protect the legitimate interests of both the consumer and the reputable manufacturer.

The measure has been again introduced at the present Congress in the House (H. R. 2218) by Hon. E. A. Hayes of California and has been referred to the Committee on Interstate commerce. Practically all the leading horticultural and agricultural organizations of the country have endorsed the measure. At the last session of Congress the bill was favorably reported by the senate committee on agriculture but pressure of business prevented a vote at the short session. It seems probable that the bill will be passed by Congress at this session if the members of Congress become convinced that the people wish and need such legislation.

We hear very frequent complaint of impure or ineffective insecticides. In many cases these complaints are unwarranted and lack of success is due to improper usage rather than poor quality, but there is no question that inferior goods are on the market as shown by the publication of analyses by some of the experiment stations. In the last Yearbook of the U. S. Dept. of Agriculture it is stated that the Bureau of Chemistry has analyzed samples of arsenate of lead which were practically nothing but white arsenic. This would of course be quite injurious to foliage. The sale of such an article is not only unfair to the consumer but hurts the sale of properly made arsenate of lead, than which there is no better arsenical insecticide. If the fruit and truck growers and farmers of the country desire such legislation for the control of the purity of insecticides and fungicides they should let their congressmen hear from them in favor of the passage of this measure (H. R. 2218) at once and make their position clear as to the need of such a law.

If you are interested in this write your Congressman at once stating that the bill is before the Committee on Interstate Commerce and you wish their influence towards favorable report by the committee and prompt action by the House.

* * *

The manufacturers of oleomargarine will make a determined effort at the coming session of Congress to so modify the existing laws now in force in regard to its manufacture and sale, as to remove the tax of ten cents per pound now imposed on colored oleomargarine. The purposed legislation specifies regulations as to the size and shape of packages and the handling of the same but makes no provision preventing its appearance on hotel or restaurant tables, once the wrappers are removed, in the place of butter. This would not only enable the manufacturers of oleomargarine to obtain a higher price for their product but it would also take the place of the pure dairy product. Prof. H. H. Wing of the Department of Animal Husbandry, president of the New York State Dairymen's Association in a letter to its members explains the above situation and calls for combined assistance of all the members and others interested to

prevent a change in the present law. A committee has been appointed from the Dairymen's Association of this State to co-operate with a similar committee from other states. In order that the work of the committee may be effective, funds are necessary. Prof. Wing has estimated that if each person in this state interested would contribute one cent for each cow that he owns, to this cause, the committee would have ample funds for this work.

* * *

Secretary Wilson in his annual report says that the farm crops this year are worth $8,760,000,000. This has given the daily papers another chance to publish two column accounts of the farmers' wealth. But the secretary has somewhat tempered the breeze of prosperity by proving where some of this money goes to. By investigation of the markets in about fifty of the large cities it was found that the retail price of beef was about 31 per cent higher than the wholesale price. Then the difference between the wholesale price and the price the farmer gets is about thirty-five per cent more. So when you take the farmers share out of that $8,760,000,000 and divide it by the number of farms the farmer doesn't get so much after all.

* * *

The sale of potash in Germany has heretofore been conducted by a syndicate called "The German Potash Syndicate" which handled the output of all the mines on a form of co-operation. As new mines have been opened and taken into the syndicate the individual sales of each mine has decreased so the demand did not develop as fast as new mines did. Consequently the mines could not work but six hours a day instead of twenty-four hours as formerly. Dissatisfaction resulted and several mines withdrew from the syndicate and a rate cutting war ensued. About July 1, 1909, American interests bought up large quantities of potash at prices forty per cent lower than that paid the syndicate the year before. Negotiations by the newly formed fighting syndicate, as it was called, were started with the idea of cancelling, either by indemnification or by coercion the purchase made by American firms. This failing the syndicate managers have threatened to have the German govenment equalize these purchases and make the cost to the Americans come up to the syndicate prices, either through an uneven export tax or a graduated producing tax on the product. If this is brought about it will be a direct attack on American fertilizer interests and will be discriminating against the American fertlizer manufacturer and against the American farmer, meaning that the American buyer would not receive the goods he had purchased in good faith from the German miner at prices he had agreed upon. The total value of the potash imported into the United States yearly is seven to eight million dollars yearly and the reduction in price would be approximately three million dollars. This means much to the German miner but Germany cannot afford a tariff war on just this one product since under our new differential tariff, the President is instructed to apply the maximum tariff if any country discriminates against the United States directly or otherwise.

Potash Salts are now admitted to the United States duty free as under the old tariff. Therefore, there should be a considerable reduction in the price of potash to the American farmers for the year 1910, whether in the form of potash salts or as a constituent of mixed fertilizers.

* * *

"Care of the Food in the Home" is the title of Farmers' Bulletin No. 375, issued last month by the U. S. Department of Agriculture. It discusses the micro-organism which cause molds and other deterioration of food. The formation of poisonous ptomaines and the bacterial changes which induce decay are explained in an interesting manner.

CAMPUS NOTES

On Wednesday evening, December first, a "Get Wise" meeting was held for the Short Course students. Entertainment in the musical line was furnished by a double quartette from the Agricultural Glee Club and by the Mandolin Clubs. R. J. Shepard, '10, President of the Agricultural Association, told the new comers about the Agricultural Association, about our regular monthly assemblies and outlined in general the student activities in this College. Professor A. R. Mann gave a talk on "The Attitude of the Short Course Man on the Farm," after some short talks on various subjects by the following students: G. P. Scoville, '10, "The Attitude of the Short Course Man While in College;" N. R. Peet, '10, "The CORNELL COUNTRYMAN;" F. S. Jacoby, '10, "The Poultry Association;" H. N. Kutschbach, '10, "The Round Up Club;" R. D. Anthony, '10, "The Lazy Club;" The attendance was very good, practically all of the Short Course students being present.

* * *

The third Assembly of the year was held Thursday evening, December 2nd. This was the first Assembly that we have had the 1909–10 Short Course students with us and they were out in full numbers. The attendance of Regular students was rather small but can be largely accounted for by the conflict with the concert given by the University Orchestra in Sibley Dome. The auditorium was very attractively decorated with evergreens, illuminated at intervals by candles, giving to the meeting a decided Christmas atmosphere. In accordance with custom the Glee Club started the program with Alma Mater; next came "Lucky Jim" by the quartette as an encore, followed by some very pleasing vocal selections by Mr. Millard, a student in the Veterinary College, accompanied by Miss Nye.

Dean Webber in welcoming the Short Course students to Cornell, said, "We extend to you a hearty welcome and the hand of good fellowship. Our pride is Good Will and Good Cheer which I feel is accentuated tonight by these Christmas decorations. You will learn many things here that are not in books and you will profit by the good examples you see set on every side. Above all we want you to grasp something of the Cornell spirit of which we are all so proud. The Director is expected to preach, so I say be orderly, cleanly, prompt, and be careful of this property which the State has entrusted to your care. We agricultural students are often called hayseeds and we may feel proud of it, however, let us always show that we are true gentlemen."

After reading a few passages from "The Training of the Farmer," a recent book by Dean L. H. Bailey, the Director said, "I wish and I urge every one of you students to read this book."

Continuing, the Dean referred to the recent interest taken in Agricultural education by prominent business men as an exceedingly important factor in agricultural extension; ho

alluded to, and quoted from the recent speech of President Brown of the New York Central Railroad at the banquet of the Railway Business Men's Association and from the article by James J. Hill in *World's Work*. In contrast to these the Dean read a resolution on education by "Buster Brown."

As his part of the program at the next Assembly the Dean announced that he would not preach but would simply tell stories, stories about the early history and development of Florida. At the conclusion of the Director's address the Glee Club sang "Cornell," the solo part being taken by G. C. Van Hoesen, '13. The Mandolin Club next entertained and in response to hearty applause played the medley of patriotic airs which made such a hit at the last Assembly. Following the Evening Song came the usual "Get Acquainted" hour where each person tried to outdo his neighbor in eating apples.

* * *

The students taking the Short Course in Horticulture met on December 3d, for the purpose of organizing the "Craig Club" for 1909–1910. A constitution was drawn up and the following officers were elected: President, Geo. H. Sprague; vice-president, W. D. Hill; secretary, Mrs. Burton Emmett. W. T. Ackert was appointed reporter to the CORNELL COUNTRYMAN.

On Friday evening, December 7th, the Craig Club met in the Lazy Club rooms and listened to a talk by Professor Craig on "The Opportunities of the Man who Elects Horticulture as a Calling." Professor Craig outlined the various branches of Horticultural work, and his talk was voted most interesting and instructive. Mr. Barrett spoke briefly on "Farm Opportunities."

* * *

At the meeting of the Round Up Club on December 6th, H. C. Young, '10, gave a talk on "Horse Breeding Laws." He outlined these laws as they exist in many states and emphasized the great need for such laws in New York State.

* * *

The Junior class in the College of Agriculture held a meeting Tuesday evening, December 7th, for the purpose of getting organized. The following officers were elected: President, T. Bradlee; vice-president, F. H. Hahnel; treasurer, H. C. Wheaton; secretary, Miss G. L. Bennett. A committee was appointed to consider the advisability of drawing up a constitution. The next meeting of the class was called for Tuesday evening, December 14th.

* * *

The Poultry Association held a very interesting and profitable meeting Thursday evening, December 9th, in the auditorium. The program started with three musical numbers; Alma Mater, led by the Glee Club Quartette; a selection by the Mandolin Club and a selection by the Glee Club quartette. After these numbers, which were enthusiastically received, H. N. Kutschbach, '10, gave a talk on "Poultry on New York State Farms." Mr. Kutschback did some Farm Survey work this past summer and was thus able to present some interesting facts. Mr. W. G. Krum next gave an illustrated talk on his recent visits to several "Successful Poultry Farms." Some fine views were shown of the Angola farm and also of several smaller farms. Following Mr. Krum, H. B. Rogers, '12, spoke briefly, emphasizing the present crowded conditions existing in the Poultry Department and showing the need for the additional appropriations which will be asked for at the coming session of the State Legislature. Acting on Mr. Rogers' suggestion and motion a committee was appointed to draw up a set of resolutions representing the present existing conditions of the Poultry Department; a copy of these to be sent by each member of the Association to the Senator and Assemblyman from his home district. At the close of the regular meeting all present collected in the Seminary

room to enjoy refreshments and the usual social hour.

* * *

Among the many numbers on the program of the Sixth Annual Meeting of the American Breeders Association, held as the guest of the National Corn Exposition at Omaha, Nebraska, December 8, 9 and 10, we noted the following: Wednesday evening, "Report of Committee on Breeding Poultry," Prof. James E. Rice, chairman; and also "Data on the Direction of the Cross with the Domestic Fowl," Prof. C. A. Rogers, Ithaca, N. Y. Thursday forenoon, address, "Some Problems in Plant Improvement," Dean H. J. Webber, Ithaca, N. Y. Thursday evening, "Report of Committee on Theoretical Research in Heredity," Dr. H. J. Webber, chairman.

* * *

The Department of Rural Art will conduct this winter a Rural Improvement Winter Course including the following lectures:

Jan. 9. What Rural Art can do for the Farm.

Jan. 16. Rural Architecture and Farm Buildings.

Jan. 23. Improvement of the Home Grounds.

Jan. 30. Gardens.

Feb. 6. Inexpensive Ornamental Design.

Feb. 13. Chalk Lessons in Design.

These lectures will be illustrated by occasional lantern slides.

* * *

The following program was enjoyed at the meeting of the Lazy Club on December 13th: "Our Present Status in Plant Breeding" by Professor H. H. Love. "Some Ecological Notes on Apple Varieties" by Mr. W. W. Bonns and "The News" by Mr. G. M. Cosh.

* * *

On Saturday afternoon, December 11th, the Cross Country team of the College of Agriculture won the Inter-college Cross Country championship for 1909 by winning the annual four mile race between the different colleges of the University. The total number of points scored by the Agricultural team was 42, the nearest competitor, the College of Civil Engineering, scoring 52 points. By this victory the College again gains possession of the Ehrich Cup for a year. It was won by this college in 1907 but lost last year to the College of Mechanical Engineering. The silk banner also given as a trophy for this race is permanently retained. The individual winner of the race was Jones, '13, who ran under M. E. colors. S. H. Stevenson, '12, captain of the Agricultural team took second place. Following are the men who scored for the Agricultural College and the positions in which they finished:

S. H. Stevenson, '12 (Capt.)	2nd.
W. D. Haselton, '12, - - -	5th.
W. H. Welker, '12, - - -	7th.
J. L. Kraker, '12, - - -	10th.
F. C. Shaw, '13, - - - -	18th.
Total,	42.

* * *

The Stone Club, representing the students in the Winter Course in General Agriculture, organized on December 16th, for the winter of 1909-10. The following officers were elected: President, N. W. Munger; vice-president, E. F. Gibson; secretary, E. R. Zimmer; representative to the CORNELL COUNTRYMAN, A. L. Shepard. The club consists of 160 very progressive young men and its members expect it to be the best of the Short Course Clubs this winter.

The schedule for Inter-college basketball has been posted and includes five games for the team from the Agricultural College:

Dec. 18.	Agriculture vs M. E.
Jan. 15.	Agriculture vs. Vet.
Feb. 1.	Agriculture vs. Law.
Feb. 8.	Agriculture vs. Arch.
Feb. 15.	Agriculture vs. Arts.

FORMER STUDENTS

'01, B. S. A.—D. S. Van Dyne since his return from the Hawaiian Islands, has spent the entire season in an entomological survey of the cane and rice fields of the South, as a result of which there has been established a laboratory for the special purpose of studying the insect pests of these two crops. Mr. Van Dyne will have charge of the laboratory which is conducted by the Bureau of Entomology, United States Department Agriculture in direct co-operation with the Louisiana State Sugar Experiment Station at Audubon Park.

'04, B. S. A.—J. G. Halpin has been appointed Assistant Professor of Poultry in the University of Wisconsin.

'07, B. S. A.—J. Louis Roberts is now located in Hood River, Oregon, where he has a place of thirty acres with several in bearing apple trees. He expects to buy twenty acres more in the spring.

'08, B. S. A.—Vaughan McCaughey and Miss Janet Harriet Brooker were married on last Thanksgiving Day in Honolulu, Hawaii. While in college, Mr. McCaughey contributed several articles to the COUNTRYMAN. We extend our heartiest congratulations.

'08, W. P.—John B. Wilson is taking up the Winter Agriculture course this year in order to qualify for a position as farm manager. Since completing the Poultry course in '08, he has been in charge of Frederick W. Vanderbilt's poultry farm at Hyde Park, N. Y.

'08, W. A.—Amos Augustus Barnes and Miss Grace Jennie Willitts were married at the home of the bride's father in Danby, recently. Mr. and Mrs. Barnes will reside in Danby.

We wish to correct a mis-statement appearing on page 110 of the December COUNTRYMAN. We stated:

" '08, B. S. A.—Royal Gilkey has recently won first prize offered by the *Country Gentleman* for the best essay on eliminating tuberculosis." The prize in question was offered by the Dairy Products Department of the New York State Fair.

'08, B. S. A.—Joseph Davis was successful in winning two first prizes for the best essay on "How to Form the Most Profitable Dairy Herd on a Farm of 120 Acres, with an Outlay of $500 for Stock" and for the best amateur plans of a sanitary stable for 24 cows.

'09, Ph.D.—C. D. Jarvis has written a bulletin published by the Storrs Connecticut Agricultural Experiment Station. The title of the bulletin is: "Proprietary and Home-Made Miscible Oils for the Control of the San Jose Scale," and is exhaustive study of the preparation, methods of use, adaptibility, and efficiency of miscible oils. Mr. Jarvis deserves great credit for his thorough work on this subject.

'09, B. S. A.—E. L. Baker writes us in a cheerful letter that he and his father, in partnership, have purchased a farm of one hundred and seventy-eight acres located near Bliss, Wyoming County, where they will make a specialty of dairying and potatoes. About thirty-five acres is taken up by a grove of first growth sugar maples.

'09, Sp.—Stuart A. Cody is manager of the poultry farm H. C. Swartwut, East View Farm, Penn Yan, N. Y.

Mr. L. S. Relyea writes that he has just purchased Spring Lake Farm at Elkton, Maryland where he intends to breed some of the best S. C. Reds that have yet been grown. He wishes to be remembered to his friends and expresses considerable interest in the development of the College.

'09, W. P.—Mr. Noble E. Keeney of Johnsonburg, N. Y. and Miss Ella A. Bacon both of the Winter Poultry course, '09, were recently married. Mr. and Mrs. Keeney will reside in North Lansing, N. Y. This is the first intermarriage of any of the Winter Poultry course students.

Ex. '10—Albert W. Peters has a most attractive farm of eighty acres, all in two and three year old apples, for which he paid $800 an acre, in Hood River, Oregon.

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RUFFLED GROUSE.